

SEQUENCE LISTING

<110> CropDesign N.V.

<120> Plant haemoglobin

<130> 4982-4

<140> 10/551,699

<141> 2005-11-21

<150> PCT/EP04/50405

<151> 2004-04-01

<150> EP 03075974.0

<151> 2003-04-01

<160> 21

<170> PatentIn version 3.3

<210> 1

<211> 860

<212> DNA

<213> Beta vulgaris

<400> 1

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tggtaaaaga atcatgggat ataataagc aaaatatccc agaatacagc cttcggtttt	180
tctccataat attggaaatt gctccagcag ccaaaaatat gttctcattt ttaagggatt	240
cagaggaagt tccacagaat aatcccaagc tgaaagctca tgcaatcaag gtttttaaaa	300
tgacatgtga atcagccatt caacttcgag aaaaagggtga agtgggttga ggagagacta	360
cccttaaata ttggggagct atccatttga agaattggagt gattgatccc cattttgagg	420
ttgtgaaaca agcattattg agaaccatag aagaagcaag tgggtgacaaa tggagtgaag	480
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aatattctta ttgtttttga ggggaaatta ttgttattgt tgattctgac tcacttattt	660
atccgagtga cttgatattg tgctttttct tgccttatta ttgattagca agaaggaaat	720
caaattcata attattggtt taaccatgta atagtgcata ttaattgtga taaaaccttg	780
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<210> 2

<211> 152

<212> PRT

<213> Beta vulgaris

<400> 2

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Ile Met Lys Gln Asn Ile Pro Glu Tyr Ser Leu Arg Phe Phe Ser Ile
20 25 30

Ile Leu Glu Ile Ala Pro Ala Ala Lys Asn Met Phe Ser Phe Leu Arg
35 40 45

Asp Ser Glu Glu Val Pro Gln Asn Asn Pro Lys Leu Lys Ala His Ala
50 55 60

Ile Lys Val Phe Lys Met Thr Cys Glu Ser Ala Ile Gln Leu Arg Glu
65 70 75 80

Lys Gly Glu Val Val Val Gly Glu Thr Thr Leu Lys Tyr Leu Gly Ala
85 90 95

Ile His Leu Lys Asn Gly Val Ile Asp Pro His Phe Glu Val Val Lys
100 105 110

Gln Ala Leu Leu Arg Thr Ile Glu Glu Ala Ser Gly Asp Lys Trp Ser
115 120 125

Glu Glu Leu Lys Cys Ala Trp Ser Val Ala Tyr Asp His Leu Ala Ala
130 135 140

Ala Ile Lys Ala Glu Met Lys Glu
145 150

<210> 3

<211> 858

<212> DNA

<213> Arabidopsis thaliana

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agcaagaagc tttggtgaag gaatcgtggg agatactgaa acaagacatc cccaaatata 180

gccttcactt cttctcacag atactggaga tagcaccagc agcaaaaggc ttgttctctt 240

tcctaagaga ctcatatgaa gtccctcaca acaatcctaa actcaaagct catgctgtta 300

aagtcttcaa gatgacatgt gaaacagcta tacagctgag ggaggaagga aaggtggtag 360

tggctgacac aaccctccaa tatttaggct caattcatct caaaagcggc gttattgacc 420

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ctcacttcga ggtggtgaaa gaagctttgc taaggacatt gaaagagggg ttgggggaga      480
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tcaagaccga gatgaaacaa gaagagtcac aaaaccctat tgatcatttg ggtatcgcat      600
acatgaatct attccacata catgatacac atatacgtgt ttctgtgtgt gtactatggt      660
gctctctgac tttctacagt tcactatddd aattataaag aaggatcttg tgctatcatt      720
aggagatac gtgatactgt agttcttctt gaaattgtta ttcgtgagaa atatcatggt      780
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<210> 4
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<213> Arabidopsis thaliana

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<400> 4

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Ser Trp Glu Ile Leu Lys Gln Asp Ile Pro Lys Tyr Ser Leu His Phe
          20           25           30

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Phe Ser Gln Ile Leu Glu Ile Ala Pro Ala Ala Lys Gly Leu Phe Ser
          35           40           45

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Phe Leu Arg Asp Ser Asp Glu Val Pro His Asn Asn Pro Lys Leu Lys
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65           70           75           80

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Leu Arg Glu Glu Gly Lys Val Val Val Ala Asp Thr Thr Leu Gln Tyr
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Leu Gly Ser Ile His Leu Lys Ser Gly Val Ile Asp Pro His Phe Glu
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Val Val Lys Glu Ala Leu Leu Arg Thr Leu Lys Glu Gly Leu Gly Glu
          115          120          125

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Lys Tyr Asn Glu Glu Val Glu Gly Ala Trp Ser Gln Ala Tyr Asp His
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 <212> DNA
 <213> Brassica napus

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 ccagcagcaa aggacatggt ctctttccta agagacacag atgaagtccc tcataacaat 180
 cctaaactca aagctcatgc tgtaaagtc ttcaagatga catgtgagac agcaatacag 240
 ctgagggaga aaggaaaggt agtgggtggct gacacaaccc tccaatactt gggctctgtt 300
 catttcaaga gcggtgttct tgatcctcac tttaggtgg tgaaagaggc attggtgagg 360
 acactgaaag aagggttggg ggagaagtac aatgaagaag tggaaggagc ttggtccaag 420
 gcttatgatc acttggcttt agccattaag gccgagatga aacaagaaga ctcacaaaaa 480
 ccctaa 486

<210> 6
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 <212> PRT
 <213> Brassica napus

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 20 25 30
 Phe Ser Gln Ile Leu Glu Ile Ala Pro Ala Ala Lys Asp Met Phe Ser
 35 40 45
 Phe Leu Arg Asp Thr Asp Glu Val Pro His Asn Asn Pro Lys Leu Lys
 50 55 60
 Ala His Ala Val Lys Val Phe Lys Met Thr Cys Glu Thr Ala Ile Gln
 65 70 75 80
 Leu Arg Glu Lys Gly Lys Val Val Val Ala Asp Thr Thr Leu Gln Tyr
 85 90 95
 Leu Gly Ser Val His Phe Lys Ser Gly Val Leu Asp Pro His Phe Glu
 100 105 110
 Val Val Lys Glu Ala Leu Val Arg Thr Leu Lys Glu Gly Leu Gly Glu
 115 120 125

Lys Tyr Asn Glu Glu Val Glu Gly Ala Trp Ser Lys Ala Tyr Asp His
130 135 140

Leu Ala Leu Ala Ile Lys Ala Glu Met Lys Gln Glu Asp Ser Gln Lys
145 150 155 160

Pro

<210> 7
<211> 50
<212> DNA
<213> Artificial sequence

<220>
<223> primer prm05458

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<210> 8
<211> 57
<212> DNA
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<210> 9
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<212> DNA
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Asp Tyr Lys Asp Asp Asp Lys
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<210> 19
<211> 159
<212> PRT
<213> Gossypium hirsutum

<400> 19

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Val Leu Lys Gln Asp Ile Pro His Ser Ser Leu Arg Phe Phe Ser Leu
20 25 30

Ile Leu Glu Ile Ala Pro Gly Ala Lys Asn Met Phe Ser Phe Leu Arg
35 40 45

Glu Ser Glu Glu Ile Pro Gln Asn Asn Pro Lys Leu Lys Ala His Ala
50 55 60

Val Lys Val Phe Lys Met Thr Cys Glu Ser Ala Ile Gln Leu Arg Glu
65 70 75 80

Lys Gly Glu Val Val Val Ala Asp Thr Thr Leu Lys Tyr Leu Gly Thr
85 90 95

Val His Val Lys Ser Gly Val Lys Asp Pro His Phe Glu Val Val Lys
100 105 110

Glu Ala Leu Leu Arg Thr Ile Glu Glu Ala Ile Gly Glu Glu Lys Trp
115 120 125

Asn Glu Glu Met Lys Asn Ala Trp Gly Glu Ala Tyr Asp Gln Leu Ala
130 135 140

Glu Ala Ile Lys Ala Glu Met Lys Asn His His Asp Glu Thr Ala
145 150 155

<210> 20
<211> 156
<212> PRT
<213> Lycopersicon esculentum

<400> 20

Met Gly Phe Thr Asp Lys Gln Glu Ala Leu Val Arg Asp Ser Trp Glu
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Phe Met Lys Gln Asp Ile Pro Gln Leu Ser Leu Arg Phe Phe Ser Leu
20 25 30

Ile Leu Glu Ile Ala Pro Val Ala Lys Asn Met Phe Ser Phe Leu Lys
35 40 45

Asp Ser Asp Glu Leu Pro Glu Asn Asn Pro Lys Leu Arg Ala His Ala
50 55 60

Val Lys Val Phe Lys Met Thr Cys Glu Ser Ala Ile Gln Leu Arg Glu
65 70 75 80

Lys Gly Glu Val Val Val Gly Glu Thr Thr Leu Lys Tyr Leu Gly Ser
85 90 95

Ile His Leu Gln Lys Arg Val Ala Asp Pro His Phe Glu Val Val Lys
100 105 110

Glu Ala Leu Leu Arg Thr Val Lys Glu Ala Thr Gly Asn Lys Trp Lys
115 120 125

Asp Glu Met Lys Glu Ala Trp Ser Glu Ala Tyr Asp Gln Leu Ala Ser
130 135 140

Ala Ile Lys Ala Glu Met His Ala Glu Ala Ala Ala
145 150 155

<210> 21
<211> 152
<212> PRT
<213> Casuarina glauca

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Val Leu Lys Gln Asn Ile Pro Ala His Ser Leu Arg Leu Phe Ala Leu
20 25 30

Ile Leu Glu Ala Ala Pro Glu Ser Lys Tyr Val Phe Ser Phe Leu Lys
35 40 45

Asp Ser Asn Glu Ile Pro Glu Asn Asn Pro Lys Leu Lys Ala His Ala
50 55 60

Ala Val Ile Phe Lys Thr Ile Cys Glu Ser Ala Thr Glu Leu Arg Gln
65 70 75 80

Lys Gly His Ala Val Trp Asp Asn Asn Thr Leu Lys Arg Leu Gly Ser
85 90 95

Ile His Leu Lys Asn Lys Ile Thr Asp Pro His Phe Glu Val Met Lys
100 105 110

Gly Ala Leu Leu Gly Thr Ile Lys Glu Ala Ile Lys Glu Asn Trp Ser
115 120 125

Asp Glu Met Gly Cys Ala Trp Thr Glu Ala Tyr Asn Gln Leu Val Ala
130 135 140

Thr Ile Lys Ala Glu Met Lys Glu
145 150